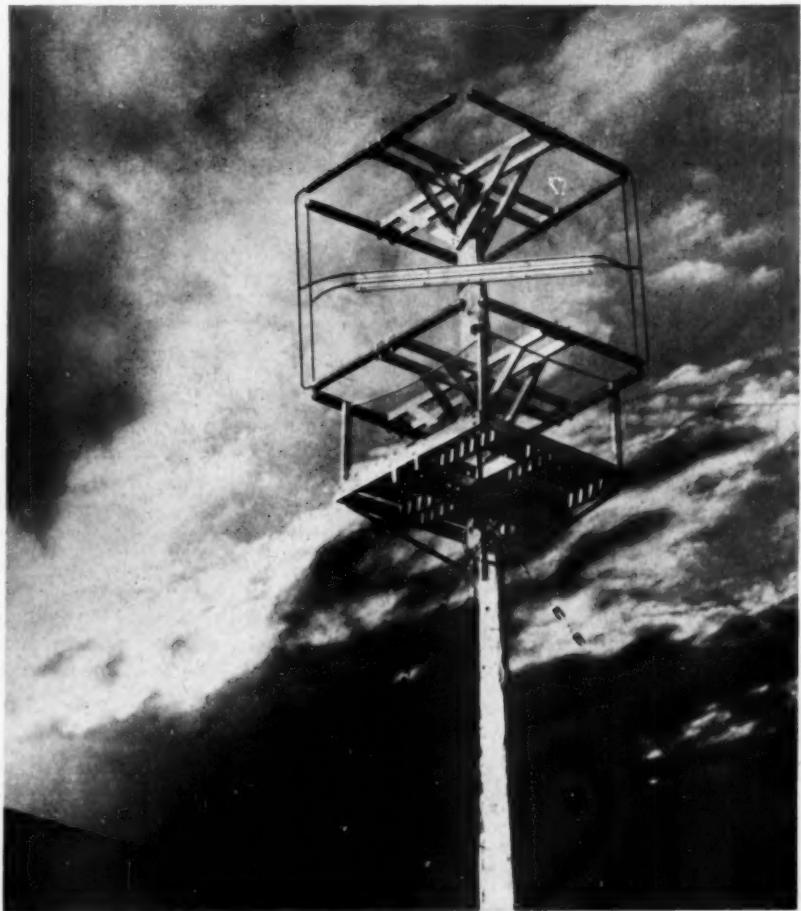


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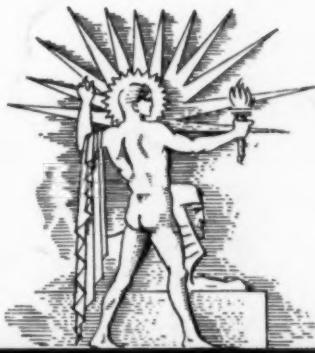
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



Cube Antenna

See Page 159



March 11, 1939



A SCIENCE SERVICE PUBLICATION

Do You Know?

About 30 per cent. of Finland is peat bogs.

The pygmy shrew, Britain's smallest mammal, can rest easily on a silver dollar.

Tensile strength of cast iron has increased in 20 years from 20,000 pounds per square inch to as much as 80,000 pounds.

Under favorable conditions southern pine trees grow fast, and can be economically chipped for gum when they are 12 to 16 years old.

In checking the dimensions of automobile bearings, factories use a machine that can magnify a human hair to a diameter of 15 feet.

An electrical expert has equipped his home with an automobile doorbell—so that chimes signal the car's arrival as it runs over a switch in the drive.

The world's largest gorilla, a 550-pound male, is a figure in a new habitat group of African apes at the Academy of Natural Sciences, Philadelphia.

To save snow water needed by crops, farmers on Canadian prairies and the Dakotas region throw up ridges of snow across the direction of prevailing winds.

The Gila Monster has a powerful venom, but its mechanism for injecting is so crude that no human being has been known to die of this lizard's bite.

SCIENCE NEWS LETTER

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QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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BOTANY

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MEDICINE

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What new treatment for relief of the pain of arthritis is now being tested? p. 147.

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ZOOLOGY—ETHNOLOGY

In what "coin" did the citizens of Franklin pay their taxes 150 years ago? p. 156.

Some South American birds migrate north, reversing the process of North American birds.

Japan and Chile are both in the earth's most active zone of earthquakes, but Chile is shaken about 1,000 times to Japan's 400.

Experiments at the University of California indicate that air-cooled poultry houses may be of value in California's interior valleys.

The United States now has 10,000 miles of highway with more than two lanes.

A British chemist comments that every year there are about 1,500 new books, 40,000 articles and 20,000 patents, of chemical interest.

Alcoholic intoxication lowers resistance to pneumonia, says the *Journal of the American Medical Association*, citing death rate figures.

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MEDICINE

Remarkable Results Claimed For Arthritis Treatment

**Six Month Investigation by Chicago Physicians
Indicates Relief of Pain Especially for Acute Cases**

A NEW treatment for arthritis, said to show remarkable results in preliminary trials, has been imported from Europe and is being successfully used by two Chicago physicians.

In acute cases the results are said to be often spectacular. In chronic cases, relief from pain and crippling comes to many after from three to six months' treatment. In a few cases no improvement takes place.

Six months' investigation of the treatment in 105 cases of arthritis and associated conditions is reported by Drs. Laurence H. Mayers and S. K. Livingston of Chicago (*Industrial Medicine*, February).

In these cases, 32.3 per cent. have shown complete improvement; 42.8 per cent., marked improvement; 19 per cent.,

slight improvement; 6.7 per cent., no improvement.

The treatment consists of hypodermic injections of a new parenteral acid preparation under the skin, into the muscles and around the nerves. The preparation is being manufactured in the laboratories of Dr. Eduard Lyss at Biel, Switzerland. It consists of sulfur, formic acid and iodine combined with a terpene.

In acute cases, such as lumbago and sciatica, these physicians find that relief from pain is almost immediate. Chronic arthritic conditions, which have for years shown no response to other forms of treatment, in many cases show remarkable improvement after a few weeks' or months' treatment.

Drs. Mayers and Livingston in their preliminary report cautiously state:

"This treatment is in no sense a panacea. Nor is it advanced as the ultimate in the treatment of arthritis."

"However, in our experience in testing 105 cases, it has evidenced a superiority over other forms of therapy in three ways: it acts rapidly; it is safe, and it produces no untoward reactions during or following the injections."

The experimental work on the new preparation in America has been done at Hines Hospital, the veterans' hospital near Chicago, and in private office practice.

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ARCHAEOLOGY

No Trace Left of Gold That Ransomed the Inca

HAS ANY museum in the world one piece of the golden treasure that Pizarro took in the conquest of Peru?

The answer is apparently "No."

Dr. S. K. Lothrop of the Peabody Museum, Harvard University, in a new report on "Inca Treasure, as Depicted by Spanish Historians," states:

"So far as I am aware, not even one object from the loot of Peru has survived to this day."

Most people have heard of the room which Atahualpa, Indian ruler of the Incan Empire, offered to fill with gold as high as he could reach, and with more silver than that, provided the Spaniards restored his liberty. Given two months to get the ransom, Indians scattered with Spanish escort. They plundered their Temple of the Sun in Cuzco. They brought gold from the great shrine at Pachacamac—though much of that remained hidden.

The Spaniards took the gold and silver vases, platters, furniture, temple objects, and they ordered the Indians to run nine forges to melt down most of it. By Spanish custom, the leader Pizarro kept one article of the loot, and he chose a golden litter weighing 200 pounds. Dr. Lothrop estimates that the Inca's ransom equaled \$8,344,307. But the Spaniards double-crossed the unfortunate Indian, eventually executed him.

By looting towns, and sending out raiding expeditions, the treasure-mad conquerors gathered in much more of the gold which the ignorant natives regarded merely as beautiful and worthy stuff for workmanship. To divide the spoils without too much bickering, and to send the Spanish Crown its required fifth, the conquerors continued to refine and reduce the gold into bars. In 1535, Charles the Fifth ordered all gold and



SULFANILAMIDE DISCOVERED

This Science Service picture has just been awarded honorable mention in the current newspaper photography contest of Editor and Publisher, showing growing appreciation of the newsworthiness of science pictures. The prize-winning photograph was made by Science Service photographer Fremont Davis using a 4 x 5 Speed Graphic with a f 4.5 Zeiss Tessar lens. The film was Defender X-F panchromatic. See SNL, Dec. 3 for other photographs by Mr. Davis on this same subject.

silver from Peru to be melted in royal mints in Spain.

Dr. Lothrop says: "Hence, our knowledge of the wealth secured from the Incas comes entirely from historical narratives. Altogether these afford but very little information."

Science News Letter, March 11, 1939

METALLURGY

New Super Pure Metals Approach 99.9999 Per Cent.

ONE OF THE important but little noted scientific serials, with new installments ever appearing, is the story of super-pure metals.

Good advertising and a slogan about purity has sold millions of cakes of soap but some of the new super-purity metals have ratings fantastically higher. Lead that is 99.9999 per cent. fine is now available as metallurgists push their research outward in quest of still further decimal points.

As the purity of metals is increased it is interesting to note that, in general, the resistance to corrosion of the metal diminishes. Somehow there seems to be a link between contaminations in a metal and the ease with which it suffers chemical attack.

Aluminum, antimony, bismuth, cadmium, copper, iron, magnesium, nickel, silver, tin, gold, carbon and platinum of high purity are now available in moderate quantities for scientific research.

Extreme care must be taken in the preparation of super-pure metals. For tin it is common to drop the molten metal into distilled water where it forms into "moss" or into drops that are as convenient, for many purposes, as are the usual small bars of metal.

Super-pure zinc offers the possibility of improving the corrosion resistance of ordinary galvanized steel or iron.

The storage of samples of super-pure metals involves new problems which are only now being overcome. Transparent wrappings for many samples must be examined and carefully selected to prevent contamination. Handling the samples without tweezers is strictly to be avoided.

It is not always necessary to start the production of super-pure metals from refined commercial grades, reports the Bulletin of Arthur D. Little, Inc. Frequently, it is found, a major impurity can be precipitated out and will carry along with it many other impurities.

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PUBLIC ASSEMBLY

Here, apparently, people of the Vannic kingdom used to assemble for public ceremonies. A workman stands by the platform which would have been used in sacrifices or other rites.

ARCHAEOLOGY

Hillside Fortifications Found at Ruins of Van

HILLSIDE fortifications that kept mighty Assyria from taking the city of Van, Asia Minor, in ancient international struggle, have been unearthed by the American expedition which is probing the buried history of the Vannic kingdom.

Traces of the inner and outer walls and a turret have been found, reports Prof. Robert P. Casey of Brown University, who led the past season's expedition together with Prof. Kirsopp Lake and Mrs. Lake, representing the University Museum, University of Pennsylvania. In time of siege, people of Van probably huddled inside the walls on their high, rocky hill, Prof. Casey concludes.

The expedition found new evidence that this small, almost forgotten kingdom had developed a high culture, when it was wrecked by the conquering Medes about 600 B.C. Beautifully fashioned pottery and implements cut from volcanic stone are among the relics that have lain buried in the ruins. The Vanni made sharp blades from this volcanic stone, and continued to use it long after metal was introduced, the archaeologists discovered. New camera techniques enabled the expedition to make color

photographs of the red, buff, and gray ware for later study.

On the north side of this hill, digging has uncovered a terrace and ceremonial platform, where the court of the kingdom may have assembled. The platform had a drain and other characteristics suggesting religious sacrifices. Adjoining this area, are remains of an ornamental wall of green and white stone, which probably collapsed about the sixth century B.C. Beneath the stones, the expedition found a well-preserved skeleton in reclining or sleeping position.

A trench cut from top to bottom of the hill revealed architectural remains of various periods. The Vannic kingdom is found to be the first to build here, since its walls were built on shelves cut out of the virgin rock.

The Turkish government is cooperating in the excavations.

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Penguins are the only birds that walk completely erect.

Starlings recently swarmed in such hordes about a wood in England that all undergrowth was killed before the birds finally left.

PHYSICS

Exploding Uranium Atoms May Set Off Others in Chain

Explanation Suggested at Physics Meeting Believed By Prof. Fermi To Be One of Several Possibilities

EXPLODING atoms of uranium may set each other off in a chain like sticks of dynamite laid in a row. New possibilities exist that such explosive ruptures, with release of enormous amounts of atomic energy, may have hidden in their action a method of perpetuating themselves in a chain, or cascade effect, it was disclosed at the meeting of the American Physical Society.

It has been found that the splitting of uranium by neutrons also produces another neutron which, potentially, could have the power to disrupt a neighboring uranium atom and thus make a continuous cycle of atom destruction and bring about a continuing release of atomic energy after the initial "trigger" action.

This new work was described informally and at an unscheduled gathering of experts in atom-smashing. Prof. Niels Bohr and Prof. Enrico Fermi, both Nobel prize winners, were among the eminent men who were present at this meeting in which the new discovery of scientists at Carnegie Institution's Department of Terrestrial Magnetism was discussed.

The discovery at the Carnegie Institution of Washington is known as a delayed neutron emission. After uranium is bombarded with neutrons and split into two parts, with a great release of energy, it has now been found that the split parts go on giving off neutrons with a reaction having a half life of about 12 seconds. So new is the work that no estimates have as yet been made of the efficiency of the process. However, it is probably very small.

Despite speculation that such an event might set off a catastrophic chain of events that would end in the complete destruction of the uranium sample, scientists believe that such imagined events have little probability of occurring. The delayed neutrons created, they believe, will go out at random from uranium atoms, and few of them would strike uranium atoms to keep the chain of atomic splitting alive. Only rarely would one of the delayed neutrons happen to

hit another uranium atom and break it, too.

Prior work on uranium splitting has indicated that for a single neutron striking a single uranium atom the process was very efficient. But it was also found that it needed enormous expenditures of energy to create a single neutron. It has been estimated that in over-all efficiency the process is only six per cent. for the most favorable cases, and it is probably ordinarily much less.

The newest work, however, raises the possibility that the delayed neutrons created in the uranium splitting may split other uranium atoms nearby, so that the single primary neutron touches off the train of atomic splitting.

In an interview Prof. Fermi admitted that the possibility of such a chain action was certainly present in any theoretical discussion of the new discovery but he added that it was only one of several other possibilities less dramatic and equally likely.

Science News Letter, March 11, 1939

Sun Is "Youngster"

THE sun is a youngster and the brilliant, dense white dwarf star Sirius B is a "grandfather" among the stellar bodies, it appears from the report by Dr. R. E. Marshak and Prof. Hans A. Bethe of Cornell University.

Sirius B is the relatively tiny star whose diameter is only 20,000 miles. Yet it is as massive as the sun, whose diameter is about 1,000,000 miles. Sirius B is 20,000 times as dense as the sun.

The dense, dwarf star consists of a gaseous envelope whose density is only slightly larger than that of the sun and a very dense core. The boundary temperature (between the envelope and the core) of Sirius B has been calculated at 8,000,000 degrees Centigrade, the Cornell scientists explained. Previous calculations suggested that this boundary temperature was as high as 60,000,000 degrees.

Dr. Marshak and Prof. Bethe, in new calculations, find that there can be only

a very small amount of hydrogen present in Sirius B. It is the gas hydrogen which is now believed to be the "fuel" which most stars burn to create their enormous outpourings of radiation.

At the high temperatures and densities of Sirius B the radiation would be enormous if the dwarf star contained as much hydrogen as the sun. Therefore it is concluded that Sirius B contains less than one-thousandth of one per cent. of hydrogen.

In the case of Sirius B it seems that the star has reached a stage wherein the high temperature and observed brilliance is caused mainly by gravitational contraction of the star.

A conclusion from this new work is that stars rich in hydrogen, like the sun, are young stars, while stars low in hydrogen content, like the white dwarf Sirius B, are the oldsters of the stellar bodies.

Science News Letter, March 11, 1939

WPA Scientist on Einstein

A YOUNG mathematical physicist now working on a WPA project at Massachusetts Institute of Technology has announced modifications of Einstein's general theory of relativity which may make it possible to apply this basic theory to the problems of atomic nuclei.

The man is Dr. Nathan Rosen who for two and a half years worked with Prof. Einstein at the Institute for Advanced Study at Princeton, N. J., and who is now at M.I.T. assisting Prof. G. R. Harrison in preparing new tables listing spectroscopic wavelengths for all the known elements.

Being a mathematical scientist, Dr. Rosen carries his "workshop" around in his head and needs only pencil and paper to devise new theories. In his spare time, in the last few months, he has been exploring the possibility of adapting the general theory of relativity—which works so well for large scale bodies—to meet the problems encountered in studies of the nuclei, or hearts, of atoms.

In his report to the American Physical Society, Dr. Rosen explained that the framework of general relativity theory is uniquely determined by arbitrarily set "laws." To adapt the theory to the nucleus, it is necessary to introduce a change into the basic framework of relativity.

This change consists of not only working mathematically with a Reimannian, or curved, space, as does present relativity theory, but also adding mathematical

symbols common to Euclidean, or flat, space.

Out of his intricate mathematics Dr. Rosen has been able to devise formulae which appear to make gravitation a factor in nuclear problems, something which previously has not appeared in theories about the hearts of atoms.

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Mapping Skin Pores

A NEW method of mapping the pore pattern of the human skin, which may some day supplement present fingerprinting methods in establishing human identity, was described by Dr. Harold A. Abramson, New York physician specializing in biophysics.

When methylene blue is applied to the skin by electrical current the whole area soon turns blue. But if the surface of the skin is rubbed thoroughly, all the color comes off except at the places where pores of the sweat glands show. Thus tiny blue dots show up under a microscope at any places where sweat glands are present, virtually over the entire body.

A significant point, although Dr. Abramson did not describe it to the physicists and mentioned only the physics of the phenomenon, is that the patterns of the sweat glands are characteristically different for every individual in the same way that fingerprints are characteristically unique. In fact, a close examination of fingerprints shows that along each ridge are pores and that the fingerprints are merely the readily visible patterns of the pores in a particular spot on the body.

Explaining the phenomenon, Dr. Abramson pointed out that electrical currents can carry drugs and dyes into the skin by a process known as electrophoresis. Using dyes like methylene blue, it has now been learned that it is through the pores of the sweat glands that this passage occurs. Previously scientists did not know whether it was the hair follicles, the skin as a whole or the pores which transmitted the materials electrically.

Drugs like cocaine, novocaine and histamine have long been known to have the ability to penetrate the skin without breaking the skin by injection.

The new method of making the pore pattern show up on any part of the body will give scientists new "maps" for every individual that are much more comprehensive than present fingerprints. Human identification in accidents where fingerprints may be obliterated is only one possible application.

Another drug which Dr. Abramson has been able to make penetrate into the body through the skin by electrical action is sodium prontosil, a drug with many of the beneficial aspects of sulfanilamide. Whether the new method will be used in the treatment of infectious diseases for which sodium prontosil is helpful has not yet been studied, but the possibility exists.

Science News Letter, March 11, 1939

Compact X-Ray Machine

M ASSACHUSETTS Institute of Technology scientists have constructed a 1,250,000-volt electrostatic X-ray generator so compact it fits in a small tank three feet in diameter and nine feet high, Prof. John G. Trump reported.

Only one-tenth the size of its million-volt predecessor, built in 1937 for the Huntington Memorial Cancer Hospital in Boston, the new generator will go into the tumor clinic of Massachusetts General Hospital.

A new mercury bath method of directing the piercing, 1,000,000-volt X-rays of another powerful machine, to be installed this spring in the new quarters of the Memorial Hospital, New York, important American center for cancer treatment, was also described to the meeting by Dr. G. Failla, Memorial Hospital physicist.

Small hollow boxes are sunk in a bath of mercury and will serve as exit slits for the powerful X-ray beams, to give

PSYCHOLOGY

Psychologists Devise Game To Teach "Mindreading"

NEW card games that teach the players "telepathy" have been developed by psychologists and will soon be put on the market by Dr. Ogden Reed, experimental psychologist, of Chicago.

The object of the game is to learn to read the thoughts of another person as he concentrates on one of the cards pulled from a shuffled deck. The prize for the best score is contained in a sealed envelope included with the game. This surprise consists of an explanation of how the "mind reading" is done.

Here is the secret for one of the games. This test is called "What time is it?" The cards each contain the face of a clock with the hands pointing to either 3, 6, 9, or 12.

angular control of the radiation to radiate hidden tumors within the body of a patient. The heavy mercury around the boxes stops the radiation, which goes through the boxes easily.

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Water Wall Cuts Off Heat

WALLS of cooling water instead of glass are the newest feat of scientists in using extremely hot electric arcs in their laboratories.

Making transparent, gas-tight enclosures in the form of cylindrical "curtains" of water was reported to the meeting by Dr. Brian O'Brien of the University of Rochester's Institute of Optics.

"If a continuous film of liquid is projected from a long narrow slot, the film will, in general, collapse a short distance beyond the orifice due to surface tension," said Dr. O'Brien's report.

"This can be prevented by a suitable component of the emerging liquid. Such films in the forms of figures of revolution are useful as transparent gas-tight enclosures about high intensity light sources, the liquid serving as a light filter."

A powerful 10 kilowatt carbon arc light has been operated many hours inside a water film, shaped like a cylinder nearly four inches in diameter and a foot long without a break occurring in the film.

Larger cylindrical films, a foot across and two feet long, have been produced.

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Experiments conducted by the psychologists have shown that nine out of ten people look first at the center of the clock dial and then move the eyes to the figure at which the hand is pointing. By observing the eyes of the person concentrating on the card, it is easy to name the hour indicated on the card.

The game not only demonstrates the importance of such unconscious facial expressions in so-called mind reading, but also provides a means of developing powers of observation, Dr. Reed commented. After playing the game 20 to 30 times, the average person should be able to name almost every card correctly, he said.

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POPULATION

Differential Birth Rate Ascribed to Birth Control

Professor Pearl Reports No Evidence of Biological Inferiority Among Intellectual and Wealthy Parents

THE STORK visits the homes of the very poor and the ignorant with much more frequency than he lights on the homes of the educated and wealthy. This discrimination may be laid directly at the door of birth control and the American habit of postponing marriage, new scientific research has revealed. This research is published in a new book *The Natural History of Population* (Oxford).

Analyzing an intimate study of more than 30,000 mothers, the author, Prof. Raymond Pearl, biologist and student of population of the Johns Hopkins University, found no evidence of any biological inferiority among the wealthy to account for their diminishing families. Neither does religion play any important part in these differential birth rates.

If it were not for the effect of birth control efforts, Prof. Pearl said, and the practice of criminal abortion, together with habits of postponing marriage, there would apparently be little or no significant differential fertility between economic, educational or religious classes, of urban American married couples.

Half Practice It

Nearly half (43 per cent.) of the American white women studied by Prof. Pearl practice birth control. The practice is much more frequent among older women with a large number of children than among young wives. Since his study includes only women giving birth to a child, Prof. Pearl estimates that the proportion may run somewhat higher in the general population. He puts it roughly at between 55 and 60 per cent.

Yet, obviously, efforts at birth control did not result in childlessness for these women. For many these efforts are intermittent or are unsuccessful either because of ignorance or because they planned for and wanted a child.

By figuring the time lag between arrival at child-bearing age and the actual birth of the first baby, and by other complicated statistical procedures, Prof. Pearl was able to estimate the effect that birth control does have on reducing the natural growth of the population. It has

much less effect than has sometimes been claimed.

Negro mothers, like white mothers, are having smaller families. Yet birth control is not widely practiced among Negroes. Of the Negro mothers included in Prof. Pearl's study, 83 per cent. had never practiced any birth control method.

Much more important than its effect on the fertility of American mothers, is the effect of birth control on reducing the numbers of the "better classes" as compared with the economic and social unfortunates.

The rate of births is just about 66 per cent. higher for very poor mothers than it is for well-to-do and wealthy mothers. But among those who practice no birth control no such disparity exists. The rate for all economic classes is on very much the same level except for a slight lowering of the rate for those in moderate circumstances.

Among those using birth control, on the contrary, the rate of births goes steadily down with increasing wealth, just as it does for the whole population.

The proportion of women making use of birth control methods varies with the amount of their wealth. It ranges from a little more than 30 per cent. of the very poor to more than 80 per cent. of the well-to-do and rich.

Prof. Pearl is not hopeful that any attempt to control size of family either by propaganda or legislation will have much effect upon this tendency. Desire for motherhood and the sex relations are extremely personal affairs, he points out. In this matter, at least, humans are most likely to have self-government.

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ARCHAEOLOGY

'Potato Spirit' Believed Ancient Indian God

CALLING a man "Old Potato" may be all right in this country. But in Peru, where the Irish potato got its start, a spud was no joking topic, if there is fact behind strange theories of Dr. Redcliffe N. Salaman, a physician and bot-



SPIRIT OF THE POTATO?

Dr. R. N. Salaman says prehistoric Indians symbolized in such vases as this the actual sacrifice rite of marring human faces, all to get a big potato crop.

anist, member of the Cambridge University faculty.

He is convinced that these Indians had a potato religion, revered a potato spirit. He even believes that they sacrificed human life to the potato spirit, later substituting a gruesome mutilation of human faces with the deadly serious intent of impressing the potato spirit, and getting a big crop. Indians in Central America and farther north had religious rites surrounding the corn crop. Why not a potato religion in Peru?

The potato was first tamed, Dr. Salaman concludes, because prehistoric Indians at some distant, unknown time in South America drifted west and found themselves clear out of the jungle in the bleak highland country of Peru and Bolivia. Taming the wild potato, they managed to stay there. It was safer than the tropical rain forest. Farther west still, on the coast of Chile, another prehistoric potato belt was developed.

That Indian potato growers worshiped a potato spirit, and sacrificed to it, is deduced by the British scientist from the quantity of potato vases found in Indian graves along the Peruvian coast. Chimú Indians of that region had a custom of making funeral vases in such varied shapes that they show the plants, animals, and customs (*Turn to Page 159*)

BOTANY

Shamrocks Bulk Large In New York Shipments

LOVE of the Old Sod is strong in the children of Erin who live in American cities. How strong, figures of the U. S. Department of Agriculture, on packages of imported plants inspected in New York, Boston and Chicago post-offices show.

During 1938, more than half of all packages containing live plants inspected in the New York postoffice (92,900 out of 166,644) contained shamrocks. In Boston and Chicago, shamrocks made up more than a fourth of the import packages of plants.

Some of the packages were bulk shipments, intended for sale by florists and vendors. Thousands of shipments, however, contained only small sprigs of the emerald three-leaf, sent by relatives in the "Old Country."

The usually stringent regulations of the Bureau of Entomology and Plant Quarantine have been modified to make easier the entry of shamrocks. The plants, however, must still be free of any soil.

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MEDICINE—SOCIOLOGY

Cancer Teaches a Lesson in Democracy

CANCER, ruthless killer that it is, can yet do mankind a service. It can teach the lesson of democracy. This aspect of cancer is set forth in the pages of a new book, *Civilization Against Cancer*, written by one of America's cancer fighters, Dr. Clarence Cook Little. There is much else in the book, but the lesson in democracy seems especially timely.

Cancer is the great equalizer, Dr. Little points out. It neither respects nor favors any group, class, race or creed. It is just as likely to strike the most intelligent and learned as the most slow-witted and ignorant. It is just as likely to strike the banker, dictator or other influential person at the height of his power as the struggling clerk, the day laborer or the man on relief.

This fact about cancer should, Dr. Little believes, make all of us pause for a moment or two and stop to consider true values in life.

"For some years," Dr. Little points out, "we have been spending most of our time and energy in a blind and ineffective struggle for individual, group, class, creed and race preference. A good deal of the trouble so created has been visible

and obvious. Much more activity, however, has gone on quietly and, in a sinister way, beneath the surface."

In our absorption in material interests, we have forgotten, Dr. Little suggests, that the real enemies of mankind are common to all men.

"All the milling about in a wild search for personal gain," he states, "and all the benefits so obtained can be negated in a few weeks by a really effective threat like cancer."

"If men would spend their major efforts in fighting common enemies instead of undermining each other's stability, we should all be much happier. It seems strange that it must take a ruthless killer like cancer to bring home that fact."

Science News Letter, March 11, 1939

STATISTICS

Domestic Quarrels Deadlier Than Gangster Slayings

DOMESTIC quarrels over trifles are responsible for more than three times as many slayings as gangster killings, the Metropolitan Life Insurance Company has found from an analysis of 500 homicides reported among a group of its policyholders.

The domestic quarrels that led to 11.6 per cent. of the murders were not triangle cases. Jealousy or thwarted love accounted for 17.6 per cent. of the killings, but these came third on the list. Second greatest cause of killing was quarreling over money or property, sometimes as little as 25 cents being involved.

The disputes over domestic or family affairs that led to murder were of the following type: "An irate husband beats and kills his wife because his dinner is not ready on time; a drunken youth shoots his mother for remonstrating with him about his drinking to excess; a man shoots a friend after an argument over being the last to be served a glass of beer in a neighbor's home."

The lesson to be learned from this study of 500 murders is summed up in the report as follows:

"This review of 500 recent homicides brings out strikingly that practically all killings arise under the stress of emotions of fear, hatred, anger, jealousy, or greed. And, absurd as it may seem, by far the majority are due to disputes or quarrels about trifles. Surely under such conditions it should be possible to reduce the number of homicides to the point reached in other civilized countries."

Science News Letter, March 11, 1939

IN SCIENCE

AERONAUTICS

Land Plane Will Make Atlantic Test Flights

THE OLD argument over whether land planes or flying boats are most suitable for ocean air transport will receive intensive experimental study by Pan-American Airways this summer, when a four-engined land plane will make regular mail flights between New York and London.

The Boeing 307, designed as a 33-passenger plane for domestic airline use, will be used for one or two round trips a month in order to give exact information on comparative performance.

No passengers will be carried, as the payload for transatlantic flights is much too small to be practical. Passengers would be undesirable anyway, since its flights are in the nature of an experiment. The fact that the land plane would be used for over-ocean service became known for the first time when it was included in tentative schedules filed with the Pan-American Airways' application for a transatlantic license.

The plane has a gross weight of about 44,000 pounds; it is little more than half as large as the clippers which will make regular passenger flights. It will, however, make the New York to London trip in six hours less than the clippers will require.

Science News Letter, March 11, 1939

MEDICINE

Ear Trouble Prevented By Helium and Oxygen

THE EAR trouble which is the "most common subjective complaint of both airplane pilots and passengers" can be relieved or prevented by inhalations of helium and oxygen, Drs. W. R. Lovelace II, C. W. Mayo and W. M. Boothby, of the Mayo Foundation, have found.

They suggest inhalations of these two gases whenever possible during periods when marked changes in elevation of the plane are occurring, especially when descending for landings. This is especially important for persons who have difficulty in opening their eustachian tubes voluntarily as by swallowing or yawning.

Science News Letter, March 11, 1939

SCIENCE FIELDS

ZOOLOGY

Oysters Not Always Ruled By Temperature of Water

OYSTERS do not always wait until the water is at the "right" temperature before they discharge their eggs, states Victor L. Loosanoff of the U. S. Fisheries Biological Laboratories. (*Science*, Feb. 24)

It has become an established doctrine in the oyster industry that oysters do not spawn at water temperatures lower than 68 degrees Fahrenheit. However, in his studies of oyster beds on the shores of Long Island Sound, Mr. Loosanoff has found spawning activity at temperatures as low as 62 degrees. Prediction of spawning based on the 68 degrees temperature relation no longer seems to hold.

Science News Letter, March 11, 1939

EUGENICS

More and Better Children Is New Eugenics Objective

FACED with a declining birthrate, particularly fewer babies among those most able economically and intellectually to rear them, our civilization should do something about it.

In totalitarian countries orders are issued. Temporarily the economic opportunities of having children seem brighter. More babies are produced. Simultaneously rigid and ruthless class discriminations are introduced that purge so-called racial minorities not favored by the dictators.

That is hardly the democratic way. A reorientation toward better people in a better world is being proposed. One group, the American Eugenics Society, has a possible program of practical eugenics.

Present knowledge of human inheritance would suggest restrictive measures upon only about four or five per cent. of the population. Those obviously unfit by reason of genetic abnormality (hereditary deafness, other such abnormalities, feeble-mindedness, insanity) should not be allowed to reproduce.

Those physically, mentally and socially inadequate should not be encouraged to reproduce as they often are at present.

Those hereditarily gifted in a marked way should be encouraged to reproduce if any way can be found to do so.

Among the vast majority of "normal" people, it is impossible in the light of present knowledge to scale hereditary capacities and to disentangle influences of heredity and environment. So it is suggested that social conditions be so modified that individual, not class, superiorities have a chance to perpetuate themselves in the population.

Practically, one step toward this would be taken if contraception were equally available to every married couple. This would mean "individual freedom in deciding on the size of family." At present the more active and competent practice birth control, while the least competent find it more difficult.

This would be coupled with reduction in the cost of bearing and rearing children, the benefits being arranged so that they go to the children, not the parents.

Science News Letter, March 11, 1939

PHYSIOLOGY

Need Mother-Love Chemical For Use of Vitamin B₁

MANGANESE, famous as the mother-love chemical, is again in the science spotlight. This element is needed by the body for utilization of one of the vitamins, B₁, Dr. David Perla, of Montefiore Hospital, reports. (*Science*, Feb. 10).

Without enough of the mother-love chemical to help make use of all the vitamin B₁ eaten, rats after one generation failed to produce milk and nurse their young, showed no maternal instinct, turned cannibals and suffered a progressive loss of fertility. The symptoms cleared up when the rats were given manganese. The rats in the studies Dr. Perla made were being given large amounts of the vitamin.

This vitamin, found in brewer's yeast, liver, whole grain cereals, egg yolk and certain other foods, is the one that prevents and cures beriberi. It has lately been found useful in treating polyneuritis in chronic alcoholism and certain other conditions.

Patients getting large amounts of the vitamin as medicine must also be given a plentiful supply of manganese, it appears from Dr. Perla's report.

Maybe, suggests Dr. Perla, the same protection effective against large amounts of vitamin B₁ can be obtained with cobalt or copper as with manganese. This has not yet been determined.

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PSYCHOLOGY

Child Geniuses Grow Up To Hold Good Jobs

HAVE you ever wondered what happens to child geniuses?

They succeed, is the answer provided by Dr. Lewis M. Terman, Stanford University psychologist, in a follow-up of the greater part of a group of 1,400 gifted children selected in 1922 as being the brightest among 250,000 California school children.

Half the boys entered the professions, law getting the largest number, and a fourth are in semi-professional occupations or business. The other fourth are scattered among such jobs as jazz band players (this is California, remember) Walt Disney artists, ghost writers, radio announcers, movie technicians, salesmen, clerks, seamen, a rare stamp dealer, a policeman and a fox farmer.

Although the depression hit them hard, not one has been on relief rolls.

A further follow-up of these gifted youngsters is provided for by a \$20,000 grant to Stanford University by the Carnegie Corporation.

The scientists now want to know what sort of people these geniuses married and how bright their children are.

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CHEMISTRY

Willard Gibbs Medal Goes to Dr. Van Slyke

DR. Donald Dexter Van Slyke, chief chemist of the Rockefeller Institute Hospital and distinguished authority of the Rockefeller Institute for Medical Research on the chemistry of proteins, enzyme action, blood chemistry and in medical fields, has been named 1939 recipient of the Willard Gibbs Medal, one of the highest scientific honors bestowed in the United States.

The award is made by the Chicago section of the American Chemical Society.

"By showing that fatal diabetic coma"—one of the last stages in diabetes—"is preceded by a falling off in the bicarbonate content of blood plasma, Dr. Van Slyke made it possible to anticipate and prevent the sudden onset of coma," the jury of award said in making the announcement. "Such bicarbonate determination is now in general application in hospitals."

Dr. Van Slyke, who will be 56 years old March 29, has contributed also to knowledge of Bright's disease and the kidneys.

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PUBLIC HEALTH

Introducing Psittacosis Polly

She Is a New Health Menace; Carrier of Parrot Fever, She Is More Dangerous Than Was Famous Typhoid Mary

By JANE STAFFORD

HAVE you met Psittacosis Polly? Beware if you do; and never, on any account, invite her (or him) into your home because a Psittacosis Polly in your parlor may be more dangerous than a Typhoid Mary in your kitchen.

Like Typhoid Mary, who recently died, Psittacosis Polly is a healthy creature who carries the germs of a deadly fever. Typhoid Mary, as you know, was a cook who became notorious because as a carrier of typhoid germs she spread this disease widely, causing many cases of illness and even death before health authorities were able to confine her in an institution and check this phase of her career.

Psittacosis Polly is a parrot, or a lovebird or other member of the psittacine bird family, that carries in a healthy body the germs of psittacosis or parrot fever. She is more dangerous even than Typhoid Mary, because psittacosis is a more highly fatal disease than typhoid fever. It kills about one out of every five patients, records from the last epidemic in this country show. It also has what health authorities call a high attack rate, meaning that anyone exposed to the germs is almost certain to get the disease. Besides this, it will be a good deal harder to find Psittacosis Polly than to detect a Typhoid Mary.

1930 Epidemic

Remember the frightening epidemic of parrot fever back in 1930 that made 169 persons sick and killed 33 and even invaded the laboratories of the U. S. Public Health Service? Two of the laboratory staff died, and so many others were sick that for the first and only time in its history the laboratory was fumigated and Dr. G. W. McCoy, then the director, sent the entire staff away, heroically remaining behind himself to continue investigations of the dangerous malady.

The possibility of another parrot fever epidemic is worrying officials of the U. S. Public Health Service right now. As a means of preventing such an occurrence, they are seriously considering

tightening the regulations governing the importation and interstate shipment of birds of the parrot family.

Psittacosis Polly is the undetected villainess of the situation. She is probably not the healthy old bird that your aunt Sarah has kept for years and years. Birds that have been in homes for many years without causing sickness and without contact with new birds are probably not dangerous. Birds in the zoo, strangely enough, have also escaped the ailment and can be visited safely.

New psittacine birds that have just been brought into the country or just offered for sale even if raised in this country may, however, be a source of danger. Any one of them might be Psittacosis Polly herself, or might have caught the disease from her.

Discovery in a Washington, D. C. family, of three cases of the ailment, acquired from two recently purchased lovebirds, has caused the present official alarm over the situation. The birds were raised in a California aviary that was inspected and certified by the state health department to be free from parrot fever infection.

Whole Family Sick

Mrs. M. bought them at a local department store as a birthday gift for her mother, Mrs. B., who lived with her daughter and son-in-law. Twelve days after the birds were brought home, Mrs. B. was down sick with parrot fever. The next day one of the birds died. Mrs. M. took care of the remaining bird until she herself got sick ten days later. The second bird died in another two days and ten days after that Mr. M. was sick.

The experience of the M. family, health authorities emphasize, is typical of the way parrot fever runs swiftly through an entire family, striking down every member, attacking the lungs as pneumonia does, and often killing the patient within seven to fifteen days.

The three Washington patients, aided by blood from two officers and a laboratory technician of the U. S. Public Health Service, who all had parrot fever during the last epidemic, have now luckily recovered.

Health authorities promptly checked on the other birds in the store where the M. family's two had been bought. The store, meanwhile, had received a second shipment of another one hundred birds. In the total of 106 unsold birds, three, from the second shipment, were found to have parrot fever. Since these birds all came from an aviary that had no signs of psittacosis in its stock, as certified by the California health department in regular inspections, one question worrying health officials is: Where did these five birds get the infection?

The only answer they can give is that there must be healthy carriers of the psittacosis germs, Psittacosis Pollies, birds that do not show any signs of the infection but that can and do pass it on to other birds. This being the case, the situation is pretty serious. If five infected birds arrived in Washington, how many others are being petted—and spreading germs—in other households throughout the land?

May Be Unaware

Probably none of the other birds sold in Washington were infected, because no more human cases have been reported there, and the cases in the M. family got enough local publicity so that in that city bird-owners were probably aware of the danger and physicians on the lookout for the disease among their patients. Physicians elsewhere, however, may not know of the situation, and psittacosis can easily be mistaken for influenza, pneumonia or even typhoid fever.

Like any of these three ailments, psittacosis may begin suddenly with chilly sensations, fever, and headache, or these symptoms may appear after a few days during which the patient has not felt exactly well. The fever when first recorded is usually between 100 and 102 degrees Fahrenheit but tends to go as high as 105 degrees F. during the second week of the illness. At this time the patient is apt to be delirious. He may also have insomnia and if he does sleep he may be disturbed by dreams. Nosebleed is not uncommon, there may be a cough and chest pains, and the patient usually has no appetite. "Rose spots," characteristic of typhoid fever, have been observed on some psittacosis patients.

Among other signs to be noted by the physician is the drop in the number of

white cells in the blood. These may decrease from the normal 6,000 or 8,000 per cubic millimeter to 3,000 or less. In one case the count was as low as 300.

An unpleasant feature of psittacosis is that after the patient has apparently recovered and has had a normal temperature for about three weeks, he may have a relapse.

Age seems to be an important factor in determining whether or not the patient will survive the illness. Children and young adults tend to have light attacks, but it goes hard with older persons. Serum from the blood of patients who have recovered from an attack of psittacosis has been used with good results in treatment of the disease.

Psittacosis or parrot fever is caused by a germ which, like viruses, passes through the pores of porcelain filters and thus can be termed filtrable. Unlike viruses, however, this germ is large enough to be seen under powerful microscopes. It apparently gets around by the kind of germ airlines that influenza and pneumonia germs use, without having to hitch rides on flies, lice, mosquitoes or other insects. The germ goes from bird to bird and from bird to man, but not, except perhaps in rare cases, from man to man.

The virus or germ is very highly infective, as shown by the experience in the Hygienic Laboratory (now the National Institute of Health) of the U. S. Public Health Service during the 1930 epidemic. Of the 11 persons who got parrot fever while studies of the disease were being made there, only two had direct contact with infected birds. Some of the others were working with cultures of germs from the birds, but some were engaged in entirely different work and never went near the rooms where either birds or germs from them were kept.

Temporary Ban

At the time of the 1929-1930 outbreak, a temporary ban was put into effect which prevented any parrots or members of the parrot family being brought into the United States. This ban has since been revised and at present such birds may be brought in under conditions designed to prevent sick or infected birds from coming in but not to exclude healthy birds. There are also regulations of a similar nature governing interstate shipment of birds of the parrot family.

In spite of these regulations, parrot fever continues to be something of a health menace—just how extensive a



BEWARE!

menace being at present unknown. Health officials are not even certain whether the present situation, as disclosed by the three cases in Washington, is due to leaks of infected birds into the country that can be prevented by tightening regulations. It may all be a question of healthy carriers—the Psittacosis Pollies. If there were only one Psittacosis Polly it might not be impossible to find the bird and thus eliminate the disease, but there are probably many of them.

Liked as Pets

The disease in man could be controlled by a nation-wide elimination of all birds belonging to the parrot family. With a considerable group of the population favoring these birds as pets, however, and with parrakeet-raising a sizable industry in one section of the country, it might be difficult permanently to prevent traffic in these birds.

Some communities have met the situation by local regulations. Baltimore, Pittsburgh and New York City, for example, have enacted embargoes prohibiting the introduction into these cities of any and all birds of the parrot family. Connecticut, Maine, Minnesota and Oregon have embargoes prohibiting parrakeets. Federal health officials are not yet ready to ask a nation-wide ban on all birds of the parrot family. If the danger grows and no other way to check it can be found, such action may be necessary, however.

Parrots and their relatives are not the

only birds that get psittacosis or parrot fever. Other birds, including canaries, have been known to have it. A recent report states that the disease has been found in Arctic petrels in the Faroe Islands, way up north of Scotland. Canaries and other birds commonly kept as pets, however, are believed to have acquired the disease by contact with parrots or other psittacine birds. If members of this bird family could be eliminated from the bird population of the country, health authorities are certain that parrot fever or psittacosis could be eliminated as a danger to the life and health of the human population.

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It is estimated that 200,000 sets of tonsils are removed annually in England and Wales.

Eels are rare in Wisconsin waters, because they must travel all the way up the Mississippi from the sea to get there.

● R A D I O

Dr. John W. Finch, director, U. S. Bureau of Mines, will be guest scientist on "Adventures in Science" with Watson Davis, Director, Science Service, over the coast to coast network of the Columbia Broadcasting System, Saturday, March 18, 6:15 p. m. EST, 5:15 p. m. CST, 4:15 p. m. MST, 3:15 p. m. PST. Listen in to your local station. Listen in each Saturday.

PSYCHOLOGY

Small Children Setting Fires Follow Biblical Reasoning

DESIRE for excitement may lead 13- or 14-year-old adolescents into fire-setting, but when small children turn to firesetting, they are expressing their aggression toward a hostile world and their reasoning is "startlingly like Biblical teachings."

Firesetting is much more common among boys than girls.

These are among the findings of a study reported by Dr. Helen Yarnell, of Bellevue Hospital and New York University Medical School, to the American Orthopsychiatric Association meeting.

The study was made on 60 children seen chiefly during 1937-1938 who had a history of firesetting. This seems like a small number compared to the number of children under 16 years admitted each year to the psychiatric division of Bellevue Hospital—1,755 in 1937 alone—but Dr. Yarnell explained that no effort was made to include every possible case.

Younger children are rarely brought to the hospital just because of their firesetting activities and these are usually discovered only incidentally, so there may be many more such cases. Pyromania is not considered a serious problem with any of the children's courts and the New York Fire Department records for the six-year period 1933-1938 showed only 72

formal charges of incendiarism preferred against children under 16 years.

There seem to be two ages for firesetting: one at about six to eight years and another at 13 or 14 years, Dr. Yarnell found. There were only two girls among the 60 children she studied.

The six- to eight-year-olds generally had an unhappy life, deprived of the love and care of parents or other guardians, often shifted from one foster home to another, and showed other forms of anti-social behavior like running away, truancy and stealing. The fires they set were made in or around their own homes, caused little damage and were usually put out by the child himself.

"Children who set fires have suffered even more severely than the average neurotic child," Dr. Yarnell said, "and are those who find it necessary to use the magic power of fire to assist themselves.

"Though few of these children have had much religious training and cannot tell a single story from the Bible, they show a reasoning which is startlingly like Biblical teachings," Dr. Yarnell continued. "Anyone who is bad is doomed to destruction by fire which purifies them, and in the end everything is made over new and perfect."

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MEDICINE

A.M.A. Asked to Establish Committee to Aid Refugees

THE American Medical Association has been asked to establish a special committee to aid the refugee physicians. The request has come from six distinguished leaders of American medicine: Drs. David L. Edsall and George R. Minot of Boston, John A. Hartwell of New York, Warfield T. Longcope of Baltimore, Howard C. Naffziger of San Francisco, and Dallas B. Phemister of Chicago.

Thus far the only action taken by the A.M.A. House of Delegates has been a recommendation to the state boards of medical registration that citizenship be the requirement for license to practice. The right to regulate the practice of

medicine rests with individual states.

Requesting A.M.A. cooperation with the Emergency Committee in Aid of Displaced Foreign Physicians, the National Coordinating Committee for Aid to Refugees and Emigrants Coming From Germany and the Boston Committee on Medical Emigres, the six physicians point out that "in the field of general practice and in the specialties also numerous openings exist for which it is difficult to find qualified American physicians; for example, poorly paid full-time physicians and practices in rural communities."

Says the *Journal of the American*

Medical Association in commenting on the subject in its current issue:

"If any of the committees can undertake to make a survey to locate such openings, a certain number of refugees can be absorbed with a minimum amount of disturbance to the rights of American physicians.

"The chief difficulties that have arisen in this situation come from the fact that some of the refugees are poorly trained or of low ethical standing, that some find it difficult to adapt themselves to American ways in the practice of medicine, and that many tend to settle in large cities already overcrowded with physicians.

"Perhaps the difficulties of adaptation can be overcome by well planned instruction. Only the coordinating committees already mentioned or groups of a similar character can aid in solving properly the problem of suitable distribution of refugees to places where they may be useful rather than a foreign body setting up irritation and forcing extrusion."

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ZOOLOGY—ETHNOLOGY

Tax Records and Payrolls Studied By Zoologists

IF YOU grumble, while you pore over your income tax return, that "they're taxing the skin off you," that will be only an echo of a possible taxpayer's plaint of 150 years ago, back in the State of Franklin, established shortly after the Revolutionary War in what is now eastern Tennessee.

Only the Franklinian citizen would have grumbled in the plural: he paid his taxes in skins. And if he added that the Governor and other state officials "had it pretty soft" he would have been literally right again. For they were paid not in pelf but in pelts—usually the beautiful soft skins of beaver.



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These curious sidelights on both history and zoology have been uncovered by Drs. Alexander Wetmore and Remington Kellogg of the Smithsonian Institution, in a study of the birds and mammals of Tennessee. They found much valuable zoological information in the old tax records and official payrolls.

The Governor was paid 1000 deer skins a year, the Chief Justice, 500. County clerks got salaries of 300 beaver skins each, and the clerk of the state's House of Commons, 200. Beaver and deer skins in those days had a cash value of six shillings apiece, which was also the value of the now almost unobtainable otter.

Taxes were paid in raccoon and opossum skins. Possum pelts were not worth much. Grafting tax gatherers had the thrifty trick of debasing the currency, by cutting off the tails of 'coon skins, sewing them on the opossum skins which they kept in the treasury, and then selling the raccoons for their own profit.

There were elk and bison in the state at that time, but by 1820 the flood of settlers had driven them all out.

The studies of Drs. Wetmore and Kellogg show that present-day Tennessee has 180 species of birds and 87 of mammals. Of bats alone there are 11 species, most of which are rarely seen.

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acquire the easily cured skin cancers as protection against possible internal cancers that are more likely to prove fatal. He and Commander Stephenson, however, do suggest that the theory be tested by studies of cancer in animals.

More statistical studies are also needed, these scientists believe, to help solve the cancer problem. Such studies as have previously been made are based on data from hospital groups, not from total population groups, they point out. Their studies are said to be the first in the history of cancer research made on a group for which such complete medical records are available. The Navy records covered each cancer patient's medical history from entry into the service until death.

Cancer does not always give a warning in time for treatment to be successful, the study also showed. In spite of annual thorough medical examinations of officers, frequent examinations of enlisted men, and the constant availability of adequate medical attention in the Navy, many cases of cancer were not discovered until too late for cure and even sometimes not until after the patient's death.

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The National Assembly in the Philippines is taking steps to establish a national language based on Tagalog, one of the many native languages.

MEDICINE

Navy Medical Statistics New Lead for Cancer Research

Prevalence of Skin and Lip Cancer in Service Is Accompanied By Low Rate of Internal Cancer

A PROMISING new direction for cancer research is suggested by a study of medical records of the U. S. Navy. The study, covering nearly 1,000,000 man-years, has just been reported by Dr. Sigismund Peller, of the Johns Hopkins School of Hygiene and Public Health, and Commander Charles S. Stephenson, M.C., U. S. Navy. (*American Journal of Hygiene*).

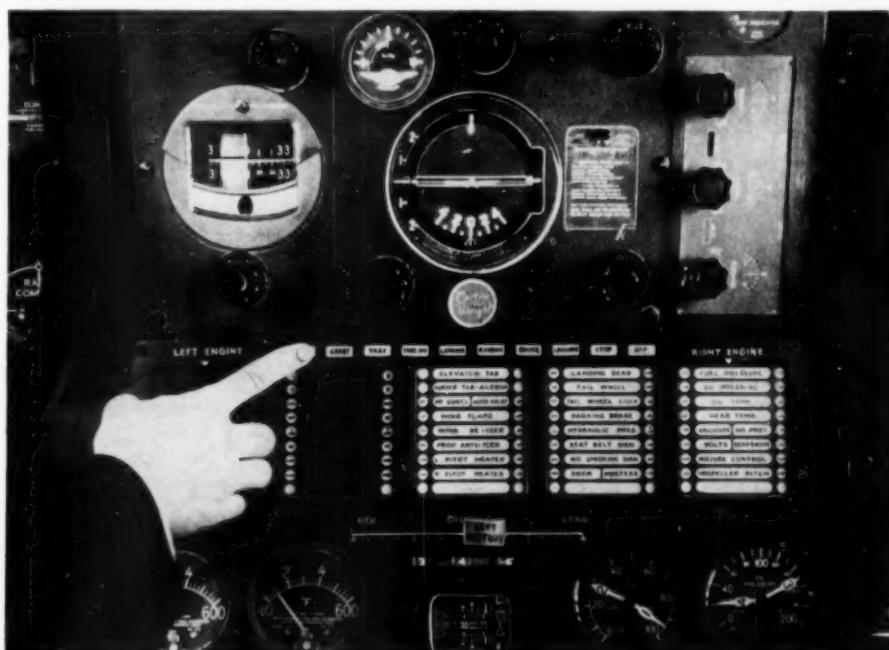
Between the ages of 25 and 64, these scientists found, the mortality from cancer is about 50 per cent. lower among the Navy personnel than would be expected from cancer rates in New York in 1930 for the same age, sex and color groups. The physicians explain this as probably being due to the greater frequency of skin and lip cancers and lesser frequency of internal cancers in the Navy personnel as compared with civilian populations in New York, London and Vienna, where cancer surveys have been made.

Skin and lip cancers occur at several times as high a rate among the active Navy personnel as in the civilian population, the study showed. This is believed due to greater exposure to skin irritants, especially sun, salt water and wind. But these external cancers are easily cured, only about 12 in every 100 cases ending fatally, according to the Navy records. So the total cancer mortality in the Navy remains low.

The irritation which causes the in-

creased number of external cancers, Dr. Peller believes, acts as a protection against the occurrence of cancer elsewhere in the body.

Dr. Peller does not go so far as to suggest that the entire population try to



AUTOMATIC TROUBLE SPOTTER

Here is the new robot pilot which flashes on 90 different lights to warn the airplane pilot of trouble in as many different parts of his machinery. (See SNL, Feb. 18) This new "tell-tale indicator" almost literally watches the instruments for the human pilot.

AERONAUTICS

American Plants Can Produce 6,000 Warplanes a Year

Army Air Corps Chief Says Our Failure To Keep Abreast Due to Lack of Emphasis on Research Not Craftsmanship

THE American air industry can produce 6,000 warplanes a year or 500 a month of the type required by the Army and Navy, it is estimated by Maj. Gen. H. H. Arnold, chief of the Army Air Corps, in a current magazine article.

Though two years ago the Air Corps' planes were equal or superior to the best in Europe, today many are behind the best foreign models now in production, the commanding officer of America's air defenses asserts in *Army Ordnance* (March-April).

Additional laboratory facilities and technical personnel are urgently needed at the Air Corps' matériel division at Wright Field in order to carry out the President's air program, he declares. The magazine prints for the first time the text of a study made by Gen. Arnold.

"Our aircraft industry," he maintains, "possesses today engineering talent and skilled craftsmanship which are the equal of those to be found anywhere in the world. Our failure to keep abreast with development abroad is due, therefore, to our failure to give our program of research and development the emphasis which has been accorded those items abroad."

Besides the expanded equipment now under construction and in the process of being installed—such as a 400-mile-an-hour wind tunnel and test stands for engines up to 3,000 horsepower—Wright Field needs a competent technical staff.

"We must offer high salaries and reasonable chances of advancement" in

order to attract and retain high grade specialists, engineers and laboratory technicians, the Air Corps chief continues.

The Air Corps has already decided how many planes of each of the different types—with the broad limits of Congress' authorization to build up the Air Force—are to be purchased, Gen. Arnold reveals.

To protect the Army against losses such as that of the experimental Douglas bomber which crashed near Los Angeles a few weeks ago, more than one model of each prototype plane should be built, he feels.

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POPULATION

Wars Are Bred By Crowding, But War Is No Solution

IN ONE little fraction of the earth's land area—a mere five per cent—live more than half of all the people of the world.

In such figures as these, says Prof. Raymond Pearl, student of population and biologist of the Johns Hopkins University, wars are bred.

Not that war will solve the problem. It will not, emphatically declares Prof. Pearl, writing in a new book, *The Natural History of Population* (Oxford).

"If crowded country A goes to war with Empire B," he says, "beats her into submission and takes away her rich and sparsely populated colonies, obviously country A will thereupon find herself an

empire and otherwise in much the position that B was in before the trouble began, and vice versa. Pot A and kettle B will merely have changed places."

Men have a strong disinclination to go far from the place of their birth.

"Germany and Japan are loudly demanding more land so that their people may spread out," Prof. Pearl said. "But their nationals, by and large, refuse to leave the homeland in any considerable numbers to settle in the fair but sparsely populated regions available to them."

"Italy, for example, had succeeded up to the time of the World War in placing only about 8,000 of her people in all her African colonies together. Again, the colonial empire that was Germany's on July 1, 1914, had, all told, but a meager 24,000 or so German inhabitants."

Distribution of the world's goods and their transportation from their origin to their place of use is a vital problem.

"Somebody," says Prof. Pearl, "must haul to these city-dwelling near-termites with only two legs, much too large heads, and no exoskeleton, all that they eat, all that they wear, and everything that protects their soft bodies from the rigours of the physical environment."

"Furthermore, this transport must never cease. If it stops for even a short time Death stalks in and starts his reaping, discriminately mowing first the lush meadows where the lower castes grow, but very quickly getting on to the uplands, where the growth is sparser but more choicely flavored, provided the freight trains do not soon start moving again."

Science News Letter, March 11, 1939

BIOLOGY

Shawmut Sally Queen Is First "Test Tube" Calf

AMERICA'S first "test tube" calf is Shawmut Sally Queen, born recently on the farm of Richard S. Schomp near Stanton, N. J. Her father and mother were never within 15 miles of each other. Insemination was accomplished artificially, under a cooperative arrangement for the improvement of dairy cattle by these means, set up under the auspices of the New Jersey Agricultural Experiment station.

Arrival of "test tube" calves is expected to be almost a daily occurrence from now on. A second has already been born, at the Pittstown farm of Clifford Snyder. About 2,600 cows are now enrolled in the new breeding unit.

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CONSERVATION

NATURE RAMBLINGS

by Frank Thone



Get After the Weeds!

WEEDS aren't getting their fair share of attention from the CCC, in the opinion of Prof. M. L. Fernald of Harvard University. The efforts of the young men could be better spent against "the vagrant pests which crowd us" than in much of the work they are doing in woodlands, where "they unconsciously become destroyers of the natural equilibrium of nature," he declares.

A good deal of "tidying-up" has been done in forests, and this is highly destructive of some of our choicest wild flowers and ferns, as well as disruptive to the economy of ground-dwelling birds and small mammals, Prof. Fernald points out. Wildlife generally needs a certain amount of judicious letting alone.

But nobody could object to a wholesale assault on such open and acknowledged pests as poison ivy, ragweed and Japanese honeysuckle. Our worst weeds are either uninvited immigrants or native species that have been encouraged to become vegetable gangsters through man's disturbance of the original state of nature. Like certain human types, they thrive best under conditions of constant disturbance.

Sometimes plant immigrants will be decent and well-behaved for a time, but fall into evil ways when conditions change. The esteem in which such plants are held is apt to undergo a corresponding change. Prof. Fernald mentions two examples: a plant originally known as Venus' Paintbrush is now called the Devil's Paintbrush; another, first called St. James' Wort, lost its odor of sanctity and now bears the ignominious title of Stinking Willie.

These aggressive foreigners, and natives gone to the bad, press hardest on the rarest and frequently the most beautiful of plants—at any rate, plants of

greatest interest and importance from the scientific point of view. And man aids and abets the weeds to which he has given their start in evil life by forest fires, by clearing out underbrush, by polluting rivers, and in a dozen other of his blundering ways.

Science News Letter, March 11, 1939

RADIO

Television Station Has Radically Designed Antenna

See Front Cover

A NEW type, cubic-shaped antenna for the 10-kilowatt television station of the General Electric Company atop a 1,500-foot mountain in the Helderberg hills region near Schenectady, N. Y., is nearing completion. It is pictured on the front cover of this week's SCIENCE NEWS LETTER.

Radical both in shape and design, the antenna will radiate picture-carrying waves polarized horizontally so that the signal will have more power than any existing television station in America.

Using four and one-half meter waves, the station, W2XB, will blanket the region of Albany and the entire capital district of New York state. Expected range of the station is about 40 miles, the distance to the horizon.

The radiating parts of the antenna are eight hollow copper bars, each four inches in diameter and seven feet long, arranged in sets of four to form the top and bottom of a perfect cube.

Schenectady's new television station will soon be completed but because there is much engineering investigation to be done prior to actual broadcasts, public transmission will not start before early summer.

Part of the system is an ultra short wave transmitter which will relay programs from Schenectady out to the mountain top station.

This relay station may be the forerunner of future chain television broadcasting for it has been suggested that major cities might be linked through such small relay stations spaced at intervals of 10 or 12 miles across country.

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From Page 151

of the people with vivid reality. Among thousands of such vases Dr. Salaman points to some shaped like potatoes, amazingly real; some that represent human beings, grotesquely decorated with potato "eyes"; and some that are

lumpy potato-shape with faces of men marked on them.

Some of the human faces are shown terribly disfigured by marred lips and noses. Dr. Salaman interprets these as exhibits of actual rites, done to human beings long ago. The theory is that Peruvian Indians thought of potato "eyes" as mouths, and the potato buds which sprouted from them resembled teeth in their imagination. Hence, they attempted to imitate this effect in human sacrifice, by the reasoning that savage minds have so often relied on. Supposedly, the spirit of the potato would be induced magically to bring to the fields the good crop that the sacrificial victim symbolized.

Dr. Salaman points out that these Indians regarded people born with hare-lip as endowed with peculiar powers, particularly with relation to frost. Therefore it was probably an additional advantage that a surgical rite to impress the potato spirit should convert the victim into a superhare-lipped individual, with upper lip cut away to expose bared teeth.

Disfigured lips and noses are prevalent in Peruvian art, apart from any potato association. Ordinarily, they are attributed to uta, a disease that destroys flesh of nose and lips, and it is usually supposed that a benevolent Stone Age surgery, not a cruel rite, was responsible for the trimmed away features to stop spread of the disease.

Science News Letter, March 11, 1939

METEOROLOGY

Lake Forms in Death Valley; Heavy Rains Responsible

WHEN really heavy rain falls in California, that's "unusual." But when enough rain falls to make a lake in Death Valley, that's news.

And that's what has happened, U. S. National Park Service observers report from the famous desert valley. The Amargosa river, usually nothing but a dry wash, has overflowed its banks and spread out into a lake dozens of square miles in extent.

Death Valley is not completely rainless, even in "usual" years. Its annual precipitation averages a trifle under an inch and a half. Even this little is enough to carpet the earth with flowers for a short time in the spring. This year, because of the heavy rains, the spring wildflower show is expected to be even finer than usual.

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*First Glances at New Books

Geography

THE DISCOVERIES OF ANTARCTICA WITHIN THE AMERICAN SECTOR, AS REVEALED BY MAPS AND DOCUMENTS—William Herbert Hobbs—*American Philosophical Society*, 71 p., 31 plates, \$2.50. Prof. Hobbs finds need for an historic check-up on Antarctic discoveries in the American sector in view of recent revelations, especially by airplane. The subject is all the more interesting for being controversial, and Prof. Hobbs brings out points and presents data which have not always been given fair consideration.

Science News Letter, March 11, 1939

Ecology

THE ROLE OF PLANT LIFE IN THE HISTORY OF DUTCHES COUNTY—Edith Adelaide Roberts and Helen Wilkinson Reynolds—*Dutchess County Planning Board, Poughkeepsie, N. Y.*, 44 quarto pages, illus., maps, \$2.50. An exceedingly interesting study in the human ecology of a community, which has been possible because its history since early Colonial times has been exceptionally well documented.

Science News Letter, March 11, 1939

Invention

IF YOU WANT TO INVENT—H. Dyson Carter—*Vanguard*, 320 p., \$2.75. A consulting engineer calls on his wide experience to tell the novice inventor some of the tricks and trials of this interesting field of endeavor.

Science News Letter, March 11, 1939

Research

INDUSTRIAL RESEARCH LABORATORIES OF THE UNITED STATES, INCLUDING CONSULTING RESEARCH LABORATORIES (6th ed.)—Callie Hull, comp.—*National Research Coun.*, 270 p., \$3, cloth, \$2.50 paper. Information concerning 1769 laboratories is indexed four ways: by subject, by location, by personnel and by serial publication. An essential book for any library—and for many individuals.

Science News Letter, March 11, 1939

Archaeology

INCA TREASURE, AS DEPICTED BY SPANISH HISTORIANS—S. K. Lothrop—*Southwest Museum*, 75 p., illus., \$2. See page 147.

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Chemistry

A SYSTEM OF CHEMICAL ANALYSIS (QUALITATIVE AND SEMI-QUANTITATIVE) FOR THE COMMON ELEMENTS—Ernest H. Swift—*Prentice-Hall*, 589 p., \$6. The new system of chemical analysis treat-

ed in this textbook overcomes the handicaps which the conventional system of qualitative analysis has had; methods which have not taken advantage of the new technique of spectroscopy and the developments in the field of micro-chemistry. This new book is completely modern and very thorough.

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Physics

PHYSICS (3d ed.)—Oscar M. Stewart—*Ginn*, 750 p., \$4. The mortality of textbooks in physics is exceedingly high so that when a book enters its third edition it has received a high tribute to its excellence. The current revision of Prof. Stewart's text has its major change in the addition of a new chapter on atomic transformation.

Science News Letter, March 11, 1939

Chemistry

SAMPLING AND ANALYSIS OF CARBON AND ALLOY STEELS—*Reinhold*, 356 p., \$4.50. The chemists of the U. S. Steel Corporation take time out from their researches to set down their methods of sampling and analysis.

Science News Letter, March 11, 1939

Engineering

YOUR AUTOMOBILE AND YOU—Roy A. Welday—*Holt*, 251 p., 88 c. The dedication of this interesting little book is to the ideal backseat driver. It discusses the automobile from many points of view and in language the layman can understand; the motor car construction, the physical fitness of the driver, the psychology of driving, traffic laws and insurance for motor cars.

Science News Letter, March 11, 1939

Physics

SUPERCONDUCTIVITY—D. Shoenberg—*Cambridge (Macmillan)*, 111 p., \$1.75. A Russian authority on superconductivity and low temperatures prepared this monograph summarizing current knowledge of this interesting field. The European references are particularly well covered.

Science News Letter, March 11, 1939

Biology—Economics

THE NATURAL HISTORY OF POPULATION—Raymond Pearl—*Oxford*, 416 p., \$3.50. See page 151.

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Medicine

CIVILIZATION AGAINST CANCER—Clarence Cook Little—*Farrar and Rinehart*, 150 p., \$1.50. See page 152.

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Chemistry

THE CHEMICAL FORMULARY, VOL. IV—H. Bennett, ed.—*Chem. Pub. Co. of N. Y.*, 638 p., \$6. The editors of this book have followed their practice of publishing a new volume only when they have accumulated sufficient numbers of new formulas to make the effort scientifically worthy. The newest volume contains thousands of practical formulas.

Science News Letter, March 11, 1939

Mineralogy

THE EXAMINATION OF FRAGMENTAL ROCKS (Rev. ed.)—Frederick G. Tickell—*Stanford Univ.*, 154 p., \$4. The revision of this book, basic in its field of geology, brings the subject matter up to date and contains new information about the porosity and permeability of porous media which will have great interest to petroleum engineers.

Science News Letter, March 11, 1939

Fiction—Anthropology

HUNTER OF THE CAVERNS—Harold O. Whitnall—*Crowell*, 119 p., illus., \$1.50. A tale of the Cro-Magnon age told by a professor of geology. As in most books of this type, intended for young readers, the plot is a device for introducing varied details of Stone Age existence, and therefore the informative spirit prevails. The young hero grows up to become a hunter, then a cave artist.

Science News Letter, March 11, 1939

Geography—Biography

THE UNVEILING OF TIMBUCTOO, THE ASTOUNDING ADVENTURES OF RENÉ CAILLIÉ—Galbraith Welch—*Morrow*, 351 p., \$3.50. One of the less familiar, but very extraordinary figures in exploration history is the hero of this book. Before writing, Welsh repeated the African journey that Caillié made over a century ago, into the mysterious and then "forbidden" City of the Sands. The adventure-minded reader should not miss knowing Caillié.

Science News Letter, March 11, 1939

Archaeology

MODERN MAYA HOUSES: A STUDY OF THEIR ARCHAEOLOGICAL SIGNIFICANCE—Robert Wauchope—*Carnegie Institution of Washington*, 181 p., 37 plates, cloth, \$3.50; paper, \$3. Since the whole Mayan pattern of civilization is being studied by cooperating scientists, this informative report on modern house building, and customs relating to homes and property, is especially significant. Excellent drawings illustrate construction details.

Science News Letter, March 11, 1939